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TITLE OF THE INVENTION

DISASSEMBLABLE ROLLING MILL STAND

FIELD OF THE INVENTION

- 5 The present invention has for object a disassemblable rolling mill stand.

BACKGROUND ART

In prior art, disassemblable rolling mill stands are known.

Solutions of disassemblable rolling mill stands are known, see for example

10 IT-UD91A000118 (US-A-5,457,979) and PCT/IT/97/00237 (WO 98/15365) that
uses two couples of screw-stays or screw tie-rods (1,2,3,4), to join and tie
the different components of a horizontal rolling stand, using a "U"
shaped support basement realizing a cage (9) that extends upwards with
uprights (90) till to enclose the lower part, including the lower horizontal
15 cylinder (51), of the whole horizontal rolling stand. US-A-5 613 392
discloses a similar horizontal rolling stand with "U"-shaped basement
whose uprights (2) extend upwards to encase (cage) the whole structure
of the roller assemblies (both lower and upper cylinder). A "U" shape
basement is also disclosed in EP-A-0040584 (Ref.24), regarding a stand for
20 stationary rolling line, but the uprights (24) of this "U"-shaped basement
do not extend to enclose the lower horizontal cylinder. US-A-5 497 644
discloses a disassemblable universal rolling mill stand with a flat
basement not having a "U"-shape feature.

Because of their being disassemblable, the present rolling mill stands

25 have a limited solidity or strength and anyway the fact of being
disassemblable limits their reliability, also making the assembling system
complex.

However, the disassemblable rolling mill stands have great advantages, first of all, the possibility of interchanging the different component elements and also of easily intervening for the change or maintenance of their parts and of the component elements subjected to wear such as the
5 rolling cylinders.

The purpose of the present invention is that of obviating the above mentioned drawbacks and of providing in particular a simple rolling mill stand, more efficient, with a complete, easy and fast interchangeability of
10 the component parts, and nevertheless, having the highest compactedness and strength.

BRIEF DESCRIPTION OF THE INVENTION

The problem is solved as claimed by means of a disassemblable
15 rolling mill stand, of the type involving a substantially "U"-shaped embedding bedplate structure, within which the rolling mill assembly, with at least a couple of horizontal rolling cylinders, is embedded and fixed by fixing means,
characterised in that said substantially "U"-shaped embedding structure:
20 - extends upwards with opposite uprights, up to at least the upper horizontal cylinder axis of said couple of horizontal rolling cylinders;
- it makes up vertical sliding jointed guide elements with corresponding opposite vertical counter-guides in said rolling mill assembly which couple inside of said opposite uprights with external
25 retaining side extension, making up a joint, on the horizontal plane, with guide walls substantially shaped like two outwardly opened opposite "C".
Thus there is the advantage of simplifying the structure even allowing the total disassemblability and the highest compactedness and strength.

In particular the guide system with opposite vertical guide uprights with inside-outside embedding, gives the highest solidity and safety in addition to a functionality which equals the integral structures, reducing at the minimum the slacks and dangers deriving from loosening.

- 5 Advantageously in the universal stand solutions eight horizontal large screws, four by four opposite, which at the same time tighten on the horizontal centre rolling mill assembly, two side extractable assemblies, and the whole assembly between said uprights, are used.

In alternative said bedplate is intended to receive a rolling mill assembly
10 with horizontal cylinders with eight engaged pivoting large screws: four upperly on the guide uprights and four at the base.

These and other advantages will appear from the following description of a preferential embodiment solution, with the aid of the
15 enclosed drawings, whose execution details are not to be considered as limiting but are only given as an example.

BRIEF DESCRIPTION OF THE SEVERL VIEWS OF THE DRAWINGS

Figures 1 and 2 are front and side elevation schematic views of the rolling
20 mill stand operationally assembled with the universal rolling mill assembly with horizontal and vertical rolling cylinders.

Figures 3 and 4 are front elevation schematic views like the preceding ones, of the universal rolling mill stand (Fig. 3) operationally extracted from its bedplate (Fig. 4).

25 Figures 5 and 6 are side elevation schematic views with respect to the preceding ones, of the universal rolling mill stand (Fig. 5) operationally extracted from its bedplate (Fig. 6), with respect to the figure (2).

Figs. 7, 8 show a front and plan elevation view of the universal rolling mill assembly, with side opposite extraction of the respective vertical rolling mill assemblies.

5 Figs. 9 and 10 show a front and side elevation view of the rolling mill stand with rolling mill assembly with a single couple of horizontal cylinders.

Figs. 11-13 and 12-14, show the view of the solution as in the preceding figures, with extracted rolling mill stand (figs. 11-12) with respect to the underlying bedplate (Fig. 13-14).

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DETAILED DESCRIPTION OF THE INVENTION

As it can be noticed in the above shown figures, the invention is substantially embodied in a disassemblable rolling mill stand, of the type involving a base structure (1) with a substantially "U"-shaped embedding
15 structure (1), within whose uprights (11) the rolling mill assembly is embedded and fixed (2), with at least one couple of horizontal rolling cylinders (210-310), by screw fixing means (202-10/12).

The substantially "U"-shaped embedding structure:

- extends upwards with said guide uprights (11), advantageously up
20 to the upper horizontal cylinder axis of said couple of horizontal rolling cylinders (210-310);
- it makes up vertical sliding jointed guide elements (11-110) with corresponding opposite vertical counter-guides (210) in the rolling mill assembly (2) with substantially opposite "C"-shaped embedding on the
25 vertical plane, by jointing with side retention (201-110) of said guide uprights (11).

Said rolling mill assembly advantageously consists of a universal assembly with horizontal centre rolling mill assembly (21) with a couple

of horizontal cylinders (210), laterally and in opposition to which, two vertical rolling mill assemblies are tightened (22) by means of eight opposite horizontal large screws (202).

In the preferential solution said rolling mill assembly (2) is tightened
5 simultaneously between said vertical guide uprights (11) of said bedplate (1), always by said eight opposite horizontal large screws (202).

Alternately said rolling mill assembly (2) includes a single couple of horizontal rolling cylinders (3-310).

In such a case the rolling mill assembly fixing means (3) consist of eight
10 rotatable large screws (10-12) pivoted:

- four of them upperly (10) on the corners of the guide uprights (11) and
- four of them on said bedplate (12).

Advantageously said rolling mill assembly (2) includes two couples of
15 screw-stays (212) operating on respective gaskets for the holding of horizontal rolling cylinders (210).

The motion transmission system for the removal and approach of the horizontal rolling cylinders (210-310) occurs by means of said screw-stays (212-312) which drive said cylinders-holder gaskets respectively
20 upper one (3100) and lower one (3101) and by means of the upper transmission assembly (211-311).

The adjustment structure being drawn from IT-UD91A000118 and PCT/IT97/00237.

200 Indicates the vertical coupling surface of the guide sides 201 of the
25 rolling mill assembly 2, which engage above the uprights 11 of the bedplate matching with its sides (110).